XTRD-100DBS
DBS-Band
Rack Mount Amplifier

- **Power Factor Correction**
- **Digital Display & Control Interface**
- **High Efficiency**

The XTRD-100DBS is a highly efficient rack mountable traveling wave tube amplifier (TWTA) designed for test and measurement applications.

The unit includes RF gain control, a solid state pre-amplifier, cooling, and monitoring and control (M&C) system.

Rack space is conserved because the amplifier occupies only 3 rack units (5¼ inches) of a standard 19 inch rack cabinet. Nominal weight is 50 pounds.

The unit features a menu driven front panel display and RS-232/422/485 serial port interfaces for complete computer control.

RF, traveling wave tube, and default parameters are easily monitored on the 4-line front panel display.

Gain control is provided via the front panel or through the serial interface.

The XTRD-100DBS incorporates high efficiency, multi-stage collector TWTs. Reliability is enhanced because both prime power consumption and internal operating temperatures are reduced for both the linear and saturated modes of operation.

Power factor correction circuitry is also included which minimizes line current distortion and reduces the required Volt-Amps input.

The automatic features of the high frequency resonant conversion power supply include quick recovery from prime power outages and multiple helix fault resets (three fault cycles.)

Depending upon user requirements, the amplifier can be configured for either single thread, redundant, or Phase combined system operation.

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PERFORMANCE SPECIFICATIONS

Parameter	XTRD-500DBS, DBS-Band
FREQUENCY RANGE	17.3 - 18.4 GHz
OUTPUT POWER	
Traveling Wave Tube	95 Watts (17.3-18.1) 85 Watts (18.1-18.4)
Rated Power @ Amplifier Flange	80 Watts (17.3-18.1) 70 Watts (18.1-18.4)
GAIN	
Large Signal, minimum	65 dB
Small Signal, minimum	70 dB
Attenuator Range (continuous)	25 dB
Maximum SSG Variation Over:	
Any Narrow Band	1.0 dB per 80 MHz
Slope, maximum	±0.04 dB/MHz
Stability, 24 Hour maximum	± 0.25 dB
Stability, Temperature	± 1.0 dB maximum over temperature range at any frequency
INTERMODULATION with two equal signals	-16 dBc maximum with two equal carriers at 4 dB total output backoff
SECOND HARMONIC OUTPUT, maximum	-60 dBc
AM/PM CONVERSION, maximum	3.0°/dB at 6 dB below rated power
NOISE POWER, maximum	
Transmit Band	-70 dBw/4 kHz
Receive Band	-150 dBW/4 kHz 10.95 to 12.75 GHz
GROUP DELAY, maximum	
Bandwidth	Any 80 MHz
Linear	0.01 nS/MHz
Parabolic	0.005 nS/MHz^2
Ripple	0.5 nS/P_k-P_k
RESIDUAL AM NOISE, maximum	-50 dBc to 10 kHz -20 (1.5 + logf) dBc 10 to 500 kHz -85 dBc above 500 kHz
PHASE NOISE	10 dB below IESS phase noise profile AC fundamental -50 dBc Sum of all spurs -47 dBc
VSWR	
Input, maximum	1.3:1
Output, maximum	1.3:1

PRIME POWER

180-260 VAC

47 to 63 Hz, single phase

Maximum VA: 650

0.95 Minimum Prime Power Factor

CE COMPLIANT

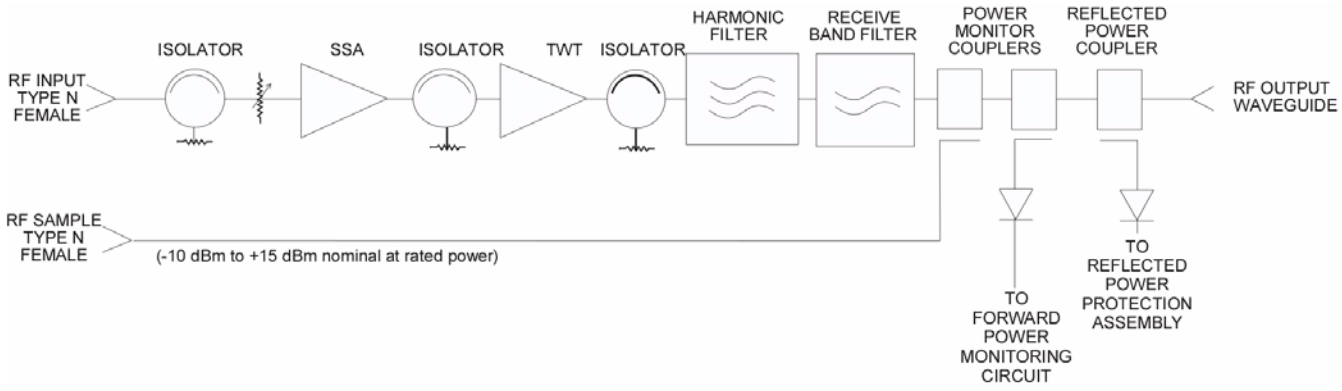
ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50° C to +70° C
OPERATING TEMPERATURE RANGE	-10° C to +50° C
HUMIDITY	Up to 95% Noncondensing
ALTITUDE	10,000 feet MSL maximum
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air

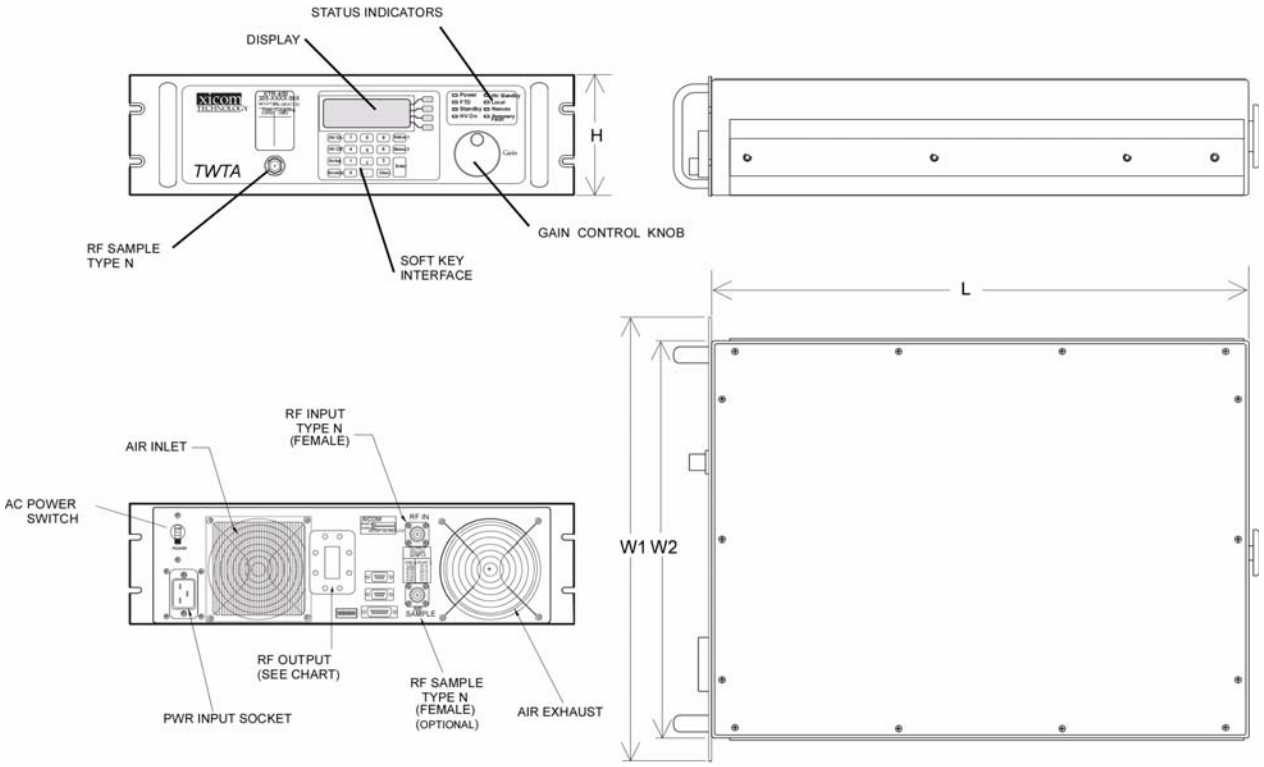
INTERFACE

TYPE		FUNCTION		
CONTROLS	Local	Local/remote	AC Power ON/OFF	
	Local and Remote	Gain	Heater Standby ON/OFF	Fault Reset
		Min/Max Power Alarm/Fault	Audio Alarm ON/OFF	Lamp Test
		Reflected Power Alarm/Fault	Units (Watts, dBm, dBW)	High Voltage ON/OFF
STATUS	Front Panel LEDs	Power	Heater Time Out (FTD)	Standby
		High Voltage	Heater Standby	Local Mode
		Remote Mode	Summary Fault	
	Front Panel Digital Display	Power Out	Attenuator Setting	Faults:
		Reflected Power	Units Selection	High VSWR
		TWT Temperature	Heater Hours	High Voltage
		Helix Current	Helix Voltage	Helix Current
		Beam Hours		TWTTemperature
	Dry Form-C Relay Contacts (Two)	Summary Fault		
COMPUTER	Hardware Interface	2 ports: RS-232	RS-232/RS-422/RS-485	
SERIAL PORT	Xicom Command Set	ASCII Commands		
RF SAMPLE PORT COUPLING		-37 dB Nominal		

Block Diagram



Outline Drawing



RF OUTPUT (WAVEGUIDE FLANGE)
DBS-Band = WR-62

DIMENSIONS		
	inches	centimeters
W1	17.00	43.18
W2	19.00	48.26
L	23.00	58.42
H	5.22	13.26

Nominal Weight = 50 lbs (22.68 kg)

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